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PREGNANT WOMAN WITH CIRCUMVALLATE PLACENTA AND SUSPECTED FETAL HYPOTROPHY CAUSED BY PLACENTAL INSUFFICIENCY: A CASE REPORT

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A – study design, **B** – data collection, **C** – statistical analysis, **D** – interpretation of data, **E** – manuscript preparation, **F** – literature review, **G** – sourcing of funding

ABSTRACT

Background: The circumvallate placenta is a rare pathology of the human placenta that occurs in 1–2% of pregnancies. It is characterized by extrachorial placental development, resulting in a ring formation along the edges of the placenta, which leads to efficiency impairment. As a consequence, it causes an intrauterine fetal hypotrophy. The fetal hypotrophic pregnancies are classified as high-risk pregnancies, requiring not only intensive monitoring of fetal development but also maternal and fetal care by the highest reference clinical center.

Aim of the study: The aim of this study was to analyze the case of a patient with circumvallate placenta and fetal hypotrophy suspicion.

Material and methods: The study was based on the case study method. The data was obtained by analyzing medical documentation collected during hospitalization. The patient was interviewed and observed. All of the selected parameters were measured and scaled.

Case report: A 30-year-old primiparous woman at 38+1 weeks gestation, with diagnosed circumvallate placenta and suspected fetal hypotrophy. The pregnancy had several complications, including gestational hypothyroidism. There was spotting and imminent abortion in the first trimester and in the second and third trimester, the patient was treated for vaginal mycosis. There was a risk of preterm labor in the third trimester. The patient was admitted to the delivery room in the first stage of labor. The course of first stage of labor was normal however the second stage of labor was complicated. Obstructed labor with ace presentation, mentoposterior position. A lower uterine segment cesarean section (LUSCS) was performed and a live full-term female infant was delivered, which was found to be small for gestational age (SGA). The course of the early puerperium was uncomplicated with an expected duration of stay in the neonatology department. Both mother and baby were discharged from hospital on postpartum day 3.

Conclusions: Circumvallate placenta is not a contraindication to natural delivery however is associated with an increased risk of many perinatal complications. Holistic care during delivery and the early puerperium requires specialized knowledge and skills of medical staff in taking care of both of the mother and the child.

KEYWORDS: circumvallate placenta, fetal hypotrophy, small for gestational age, case study

Background

The human placenta is a highly specialized maternal and fetal organ that is formed during pregnancy allowing the growth and development of the fetus. It performs many important functions and without it, the development of the fetus in the uterus would be impossible [1].

Circumvallate placenta is a rare pathology of the human placenta that occurs in 1–2 % of pregnancies [2]. Circumvallate placenta is a type of extrachorial placenta, where the membranes of the chorion located at a distance from the edge of the placenta. Changes related to the deviation from the norms in the shape of the placenta leads to placental insufficiency and

adversely affects the development of the fetus. The ring forming the rounded placental margin significantly reduces the total surface of the chorion [3]. Circumvallate placenta is clinically important, which is a challenge for staff, who care for a pregnant women as it is often associated with a high frequency of serious perinatal complications. Only a few cases of this type of extrachorial placenta in the history of perinatal medicine have been described so far. Establishing the correct and unequivocal diagnosis of circumvallate placenta during pregnancy is difficult even for specialists, and the detection of placental pathology usually occurs only when the placenta is examined after delivery [3]. The etiology of the development of circumvallate placenta is not fully understood. There are two main theories for the development of this pathology. The first theory concerns the fusion of the amniotic sac with the decidua at an early stage of pregnancy, which leads to the formation of adhesions. The second theory seems to be particularly important and is reflected in the background of the research carried out so far. It suggests an excessive, too deep implantation of a fertilized egg in endometrium [2].

Circumvallate placenta is more common in primigravida women, those over the age of 35 years of age, and women who have received treatment for infertility such as in vitro procedure [4]. A typical circumvallate placenta contains a small area of extant chorion frondosum and a visible, wide white fibrin ring located at the periphery of the placenta [3]. Placental pathology can be diagnosed using 2D, 3D or HDLive ultrasound techniques [5]. Ultrasound scan shows the uplifted placental edge with an irregular structure, additionally there is a surrounding ring. Subchorionic hematomas and numerous vacuoles may also be visible [6]. Clinical signs during pregnancy that may suggest the presence of a circumvallate placenta include recurrent vaginal bleeding in the first and second trimester, the presence of subchorionic hematomas on placental imaging, oligohydramnios, premature rupture of membranes (PROM), placental abruption, placental insufficiency, fetal hypotrophy, IUGR, and an SGA fetus. Diagnosis of circumvallate placenta classifies is associated with the classification of pregnancy as high risk, with a high risk of preterm labor and complications in the infant due to prematurity [7].

IUGR is defined by the World Health Organization (WHO) as a fetus with an estimated birth weight of less than the 10th percentile for its gestational age [8]. Hypotrophic newborns also include small but healthy infants whose body weight and length are genetically determined; termed SGA. IUGR causing fetal hypotrophy may be a result of a combination of maternal factors including inadequate nutritional intake, pregorexia, poor weight gain in pregnancy, prenatal body mass index (BMI) below 20 and prenatal body weight below 45kg or greater than 75kg. Placental factors contributing to IUGR include subchorionic hematoma and placental abruption. Fetal factors include genetically determined small fetal weight, and genetic defects [9]. We pick two forms of hypotrophy out. Early IUGR occurs before 32–34 weeks of pregnancy, including in the second trimester. Late IUGR occurs after 32–34 weeks of pregnancy [10]. Ultrasound examination is considered to be the primary diagnostic method for detecting fetal hypotrophy where there is abnormal fetal growth i.e. fetal weight below the 10th centile for gestation, or in extreme cases, below the 3rd centile [11]. Care of pregnant women with IUGR should be provided by a clinic with the highest reference level.

Aim of the study

The aim of this study was to present a clinical case of a pregnant patient diagnosed with a circumvallate placenta and suspected fetal hypotrophy. This study aimed to analyze how to proceed with circumvallate placenta during pregnancy, labor and the early postpartum period and expand knowledge about the current guidelines regarding optimal care for women with suspected fetal hypotrophy.

Material and methods

This research paper was based on the case study method. The techniques that were used to describe the individual case study were: analysis of medical documentation, interview, and observation of the patient, including recording of vital signs. The patient was admitted to a delivery room in the Obstetrics and Gynecological Department, Subdivision of Perinatology and Delivery, a hospital with 3rd degree of reference. The case analysis was carried out with the patient's consent and with the provision of medical documentation in accordance with the current rules. The patient was assured of the anonymity of the study and the collected information was kept as a confidential data.

Case report

Patient characteristics

The patient was a 30 year old primipara at 38+1 weeks gestation with a singleton pregnancy. On initial presentation the fetus was found to be in a cephalic presentation with a fetal heart rate of 130 beats per minute (BPM). The patient was diagnosed with circumvallate placenta and the fetus was SGA with suspected fetal hypotrophy. The patient, having been diagnosed with gestational hypothyroidism, was euthyroid at presentation. The patient tested positive for group B streptococcus (GBS) and negative for syphilis (via Venereal Diseases Research Laboratory (VDRL) testing), hepatitis B antigen, anti-hepatitis C antibody and HIV. The patient was admitted as an emergency in the first stage labor to the Obstetrics and Gynecological Department, Subdivision of Perinatology.

Past medical history

The patient had been hospitalized seven years prior due to severe mononucleosis and cytomegalovirus infection. Medical history was otherwise unremarkable, with no previous surgical procedures. The patient's height was 172cm, and prenatal body weight was 50kg. Prenatal BMI was calculated at 16.9kg/m^2. The patient was noted to be underweight, and appeared skinny.

Obstetric interview

The patient was 13 years of age at menarche, and had a regular 28-day menstrual cycle, with five days of painful bleeding. There was no prior history of pregnancy, childbirth, or miscarriage. The patient had not undergone any fertility treatments or used assisted reproductive technology.

Socioeconomic interview

The patient was married and living in good housing conditions. Appropriate economic status and material conditions. She obtained a college education and was employed as a teacher in a public kindergarten, carrying out both physical and mental work. There was no use of addictive substances reported (coffee, isotonic drinks, alcohol, nicotine, passive smoker, drugs, or painkillers). The patient was on medical leave from work from the 8th week of pregnancy.

The course of the current pregnancy

The patient engaged with antenatal care from the 5th week of pregnancy, attending antenatal visits as per usual recommendations. At the time of the birth, the patient's body weight was 62.5kg, having gained 12.5kg during the pregnancy. Menstrual bleeding prior to the pregnancy was described as typical. The patient first felt fetal movements at approximately 16 weeks gestation, and continued to observe fetal movements throughout the pregnancy. Fetal descent occurred at the 37th week of pregnancy, manifesting as a reduction in fundal height.

The patient experienced nausea and vomiting between 8 and 10 weeks of pregnancy, which resolved spontaneously. There was no edema noted during the pregnancy or at the time of admission to the delivery room. There were no urinary symptoms described, however the patient complained of constipation, likely due to reduced physical activity, which did not require any invasive diagnostic or therapeutic procedures.

The course of pregnancy was complicated by gestational hypothyroidism which was diagnosed in the 6th week of pregnancy. At this time, thyroid function tests were as follows: thyroid stimulating hormone (TSH) = 3.5mIU/L, free T4 (fT4) = 1.3pmol/L, antithyroid peroxidase antibodies (anti-TPO) = 36.30IU/mL. The patient was treated with Euthyrox at increasing doses: 37.5mg, 50mg, 75mg. At 19+5 weeks, thyroid test results were as follows: TSH = 2.4mIU/L, fT4 = 4.13pmol/L, anti-TPO = 37.00IU/mL and at 27+4 weeks: TSH = 3.38mIU/L, fT4 = 1,=.22pmol/L, fT3 = 2.46pmol/L. Other blood counts were normal throughout pregnancy.

During early pregnancy, between 7 and 11 weeks, there was spotting and imminent miscarriage caused by the presence of subchorionic hematomas. The hematomas were absorbed following treatment with Lutein 100mg 3×2 tablets and Duphaston 10mg 2×2 tablets. This treatment continued until the 15th week of pregnancy.

During the pregnancy, the patient treated for vaginal candida albicans infection using Pimafucin 100mg 1×1 intravaginally, Macmiror Complex 500 (Nifuratel 500mg + Nystatin 200,000IU) 1×1 intravaginally, Pimafucort (Hydrocortisone 30mg + 30mg Natamycin + Neomycin 3,500IU) ointment 15g 2×1 Nystatin VP 100,000IU 1×1 vaginally. Treatment was complete by the 32nd week of pregnancy.

Ultrasound scans with measurements were performed as follows: At 10+5 weeks, crown rump length (CRL) = 3.31cm. At 13+4 weeks, CRL = 6.75cm, biparietal diameter (BPD) = 2.11cm, femur length (FL) = 1.27cm, nuchal translucency (NT) = 1.43mm. At 21+5 weeks, estimated fetal weight (EFW) = 389g, BPD = 4.75, occipitofrontal diameter (OFD) = 6.22cm, abdominal circumference (AC) = 15.77cm, head circumference (HC) = 17.43cm, FL = 3.67cm, amniotic volume index (AVI) = 17.56cm. At 24+6 weeks EFW = 748g, BPD = 6.13cm, OFD = 8.03cm, AC = 20.83cm, HC = 22.33cm, FL = 4.38cm, AVI = 18.52cm. At 28+5 weeks, EFW = 1,066g, BPD = 8.15cm, OFD = 8.69, HC = 24.95cm, AC = 22.78cm, FL = 5.15cm, AVI = 13.47cm. A pathological circumvallate placenta with numerous vacuoles was noted on ultrasound scan at 28+5 weeks. At 33+1 weeks, EFW = 1,760g, BPD = 8.50cm AC = 28.19cm, HC = 30.70cm, FL = 5.79cm AVI = 12.77cm. On the ultrasound performed at 33+1 weeks, fetal hypotrophy and SGA was suspected, with an estimated fetal weight which hovered around the 10th percentile. At the end of pregnancy, fetal weight was around the 10th percentile, with fetal growth potential preserved.

The patient was hospitalized in the department of Pathology of Pregnancy at 35+5 weeks gestation for observation for premature birth. Ultrasound scan on admission showed EFW = 2,010g, BPD = 8.66cm, AC = 33.87cm, FL = 6.98cm, AFI = 10.18cm. Throughout the course of pregnancy, placental blood flow measurements of the uterine artery (UtA), umbilical artery (UA), middle cerebral artery (MCA), and ductus venosus (DV) were normal.

Antenatal care and education were performed by the midwife and an independent obstetrician. Antenatal education was performed online after 25 weeks of pregnancy by the primary care midwife. The patient participated in online antenatal classes with her husband. The patient was well prepared for childbirth and the role of a mother.

Stages of labor

Labor began spontaneously at 38 weeks gestation. The first stage of labor progressed normally and lasted 11 hours. The fetal membranes ruptured at a cervical dilatation of 7 cm. Clean amniotic fluid was noted to drain from the 9th hour of the first stage of labor, 3 hours prior to delivery. Cervical dilatation progressed normally. Cardiotocography (CTG) showed a regular FHR of approximately 145 BPM with normal variability and numerous accelerations. During delivery, continuous cardiotocography with wireless detectors was used. In general, the patient was in good medical and obstetric condition and was motivated to give birth by natural forces. The patient's husband was present during the labor and she tolerated the stay in the delivery room well. The midwife discussed the birth plan with the patient and as per the delivery plan, the patient decided not to use epidural analgesia. The patient was informed of potential symptoms of worsening hypothyroidism and instructed to report these to medical staff. The midwife's care during labor involved frequent assessment of the patients general condition and measuring vital signs. The midwife also frequently checked for the possibility of vaginal bleeding and other symptoms of placental abruption. The midwife assessed the wellbeing of the fetus via CTG recording. The midwife maintained conversation with the patient and her husband to ensure good care during labor, and to enable detection of poor mental state. The midwife promoted privacy and encouraged the patient to use the shower for both hygiene and to take advantage of the relaxing properties of warm water. The patient was encouraged to stay hydrated and regularly empty the bladder. The midwife suggested an upright position that would be appropriate and comfortable for the patient, taking into account her obstetric condition. Entonox (50% N_2O + 50% O_2) was utilized as a form of analgesia.

Pharmacotherapy: Ampicillin 2g in 100mL 0.9% NaCl was administered intravenously according to local protocol due to GBS infection. An initial dose of 2g was followed by 1g every 4 hours until delivery. Oxytocin-Richter 5IU in 50mL 0.9% NaCl was administered intravenously via an infusion pump when contractions were deemed not to be of adequate strength. According to the general and obstetric condition of the patient, the flow of Oxytocin was increased by 1mU/h, to achieve effective contractions. The maximum flow used was 8mU/h. The patient was reassessed every 15–30 minutes. Paracetamol Kabi 10mg/mL, 100mL was administered intravenously for pain relief.

The second stage of labor lasted for one hour and was complicated. The second stage of labor lasted 1 hour. Labor was obstructed. After about 40 minutes of pushing, incorrect position of the fetus was detected. Vaginal examination revealed face presentation, with a mentoposterior position. Due to the malposition, vaginal birth was impossible and the decision was made to deliver the fetus by caesarean section. The midwife prepared for caesarean section by preparing a disposable protective suit for the patient and removing hair from the skin of the perineum and abdomen. The midwife also made sure that the venous cannula was patent, and catheterized the patient's bladder using a Foley catheter (CH16 with the balloon inflated with 5–10mL). The midwife prepared the necessary documentation required for transfer to the operating room. The patient was reassured that caesarean section was the right decision. FHR ranged from 120–130BPM prior to transfer to the operating room. Patient was in good general and obstetric condition on transfer to the operating room. Pharmacotherapy was administered in accordance with routine recommendations for preparation for caesarean section: Intravenous Cefazolinum 1g in 100ml 0.9% NaCl and multielectrolyte fluid 500ml.

A LUSCS was performed and a full-term female newborn was delivered. Apgar scores were 9, 10 and 10 at 1, 5 and 10 minutes, losing 1 point for skin color. Examination of the newborn was performed under a heater. There were no breathing difficulties. Body weight was 2,330g, body length was 49cm, head circumference was 32cm and chest circumference was 30cm. The newborn was dried and the umbilical cord stump was dressed. A pulse oximeter was placed on the right lower limb which gave oxygen saturations of about 98% in the first two hours of life. An umbilical cord blood sample was collected for blood gas analysis in accordance with the hospital's policy on caesarean sections. The newborn was handed to the father under the supervision of a midwife in order to initiate kangaroo care, and then the child was transferred to the neonatal unit. The baby latched on for the first time in the maternity ward, after the mother left the intensive care room following caesarean section, approximately 4 hours after birth.

Midwives regularly assessed the patient's obstetric status, including the amount, character and color of the lochia, as well as the height, location and contraction of the uterine fundus. Due to the presence of the pathological placenta, there was an increased risk of postpartum hemorrhage. The patient's vital signs were regularly measured with all parameters being normal. To minimize the risk of venous thromboembolism, the patient was encouraged to mobilize early and thromboprophylaxis was introduced. The patient was prepared for self-care and childcare.

The midwives in the maternity ward aided the patient with basic hygiene of the baby and alleviated the patient's fears about the small size of the baby. The mother was motivated to exclusively breastfeed and was referred to a lactation care midwife who provided education specific to breastfeeding a newborn with low birth weight and provided guidance on breastfeeding technique. The lactation care midwife worked with the patient and her baby until discharge. The infant remained in the rooming-in maternity unit with the mother. The newborn showed no difficulties in latching onto the breast and was fed regularly on demand. There were no signs of fatigue or low feeding efficiency

observed. The child was calm, and initial weight loss was proportionate to birth weight and maintained physiological norms.

The course of early postpartum proceeded without complications and both the mother and the newborn were discharged from the hospital three days following delivery. On discharge, the newborn weighed 2,275g and was in good general condition. The course of newborn's stay in the Neonatology Department was without complications. Screening tests and Vaccination with hepatitis B were performed. The child received vitamin K 1mg intramuscularly and vitamin D3 400 IU. Care was handed over to the community midwife.

Discussion

The course and therapeutic processes involved in a patient's journey through pregnancy, labor and the puerperium is individually tailored according to the clinical situation, the patient's requirements and the environment. Particular attention is paid to facilitating vaginal delivery and providing the mother with adequate physical and emotional support through specialist medical care. Proceedings during the delivery should be according to the delivery plan prepared by the woman prior to labor where possible. Caring for a woman in the immediate postpartum period is aimed at preserving an uncomplicated puerperal course, ensuring effective lactation, and preparing the mother for child care and self-care after hospitalization. The midwife provides holistic perinatal care and as the person closest to the woman and her baby, is able to quickly recognize and act on any disturbing symptoms.

Circumvallate placenta is a rare placental pathology [4]. There are few qualitative research papers in the literature about such cases, so it is important to detail the clinical aspects of circumvallate placenta during pregnancy, labor and early postpartum to highlight this rare condition to relevant healthcare professionals. So far only a few cases of repetitive circumvallate placenta have been described by perinatal medicine centers worldwide [14].

Current research suggests that a circumvallate placenta may be a risk factor for severe adverse obstetric and neonatal outcomes [15]. Therefore pregnant woman require interdisciplinary care during a pregnancy complicated by a circumvallate placenta, and special attention should be given to the assessment of obstetric condition, particularly the possibility of characteristic vaginal bleeding. If vaginal bleeding does occur, it is important to delineate the amount, character and color of the blood, and if the bleeding is accompanied by lower abdominal pain or uterine contractions. The patient should be thoroughly assessed, including vital signs such as blood pressure and heart rate, and monitored closely for signs of threatened miscarriage, preterm labor or placental abruption which can be life threatening conditions for both the pregnant woman and the fetus. In the described case the patient experienced vaginal bleeding, characteristic for placental pathology during first trimester, indicating threatened miscarriage. The ultrasound image showed subchorionic hematomas and vacuoles at that time. The extravasation of blood, mainly of maternal origin, into the space between the decidua and the chorionic membranes creates subchorionic hematoma and may lead to chorionic abruption, a life threatening condition for the fetus [13]. Hemorrhage and spotting in early pregnancy, as well as the presence of placental hematomas predisposes the neonate to anemia [7].

In this case, symptoms manifesting from the presence of a circumvallate placenta are consistent with those described by the other authors. The patient in this case was deemed to be at risk of preterm labor and required hospitalization at 35 weeks of pregnancy [4].

The limitation of the placental surface which occurs in cases of circumvallate placenta is associated with the failure to achieve fetal growth potential and may lead to fetal hypotrophy [15].

Fetal hypotrophy is a complication of pregnancy associated with a low birth weight of the newborn. IUGR leading to fetal hypotrophy commonly results from a combination of maternal, placental, fetal, and genetic factors. In the care of the pregnant women, the midwife assesses risk factors for fetal hypotrophy. Maternal factors influencing fetal hypotrophy in this case included a prenatal BMI of < 20, poor weight gain in pregnancy and primiparity. Placental factors influencing fetal hypotrophy in this case were the placental pathology and the presence of subchorionic hematomas in early pregnancy [9, 16]. Fetal hypotrophy refers to infants that are below the 10th percentile in weight according to gestational age at birth. This group of fetuses also includes SGA infants who are healthy but small. A fetus identified as an SGA with normal growth potential can be considered a physiologically small child without an increased risk of complications. SGA fetuses are around the 10th percentile, but gain weight appropriately and steadily throughout pregnancy. There is no increased risk of intrauterine death or hemodynamic abnormalities in SGA fetuses compared to IUGR fetuses [10].

The key role in caring for a patient with suspected or diagnosed IUGR is to scrupulously observe symptoms that may indicate poor condition of the fetus. In a patient with a complicated pregnancy where the wellbeing of the fetus may be compromised, CTG monitoring is frequently utilized, depending on the week of pregnancy. IUGR is an indication for keeping CTG records during pregnancy after 24 weeks [17]. This patient had additional CTG recordings performed at her private care obstetrician and did not require hospitalization on any of these occasions.

Time of delivery is a key decision to be made in cases of complicated pregnancies. The decision to deliver the fetus prior the due date should take into account if the risk of death or damage to the fetus as a result of leaving it in the uterus is higher than the risk of complications resulting from prematurity [10]. The decision

to deliver a fetus is taken after a thorough analysis of gestational age and assessment of the health state of the fetus. SGA pregnancies with normal growth potential should be continued until the due date [10]. Vaginal delivery is not contraindicated in these cases. The midwife should provide comprehensive and holistic care for a woman and her husband who are expecting a baby with a low birth weight (< 2,500g). She should give emotional support and explain any doubts based on current medical knowledge. Healthcare professionals should remember the benefits of vaginal birth for both mother and baby and delivery should be vaginally wherever possible [18]. In this case, the patient was prepared for a vaginal delivery.

Infants born as a result of a complicated IUGR pregnancy are at increased risk of perinatal death, meconium aspiration syndrome, pulmonary hypertension, hypothermia, hypoglycemia, hyperglycemia, hypocalcemia, polycythemia, jaundice, feeding difficulties, food intolerance, necrotizing enterocolitis, septicemia and pulmonary hemorrhage. Infants are also at higher risk of neurobehavioral disorders, where children are restless, tearful, and highly alert and sensitive to environmental stimuli [9]. During delivery a neonatal intensive care unit (NICU) team should be available, ready to help the newborn in the first minutes of life, if necessary. A child born from pregnancy where there was a pathological placenta is more likely to have infant respiratory distress syndrome and require hospitalization in the NICU [7]. Hypotrophic newborns may require rapid input from the neonatal team in the first minutes of life, and may require to be admitted to the NICU for further diagnostics. Admission to NICU is associated with preterm labor and prematurity. In the described case, immediate postpartum care was performed according to the usual standards of care for a full-term newborn. The child did not require respiratory support. Pulse oximeter monitoring was used on the right lower limb and demonstrated satisfactory oxygen saturation levels [19]. The satisfactory condition of the newborn allowed the child's father to initiate kangaroo care outside the operating room, whilst the infant's pulse oximetry was observed. Kangaroo care reduces infant's stress related to childbirth and reduces the effects of external stimuli, giving the child a sense of safety and having a positive effect on bonding with the parent. In this case the infant was then admitted to a warmed bed in the neonatal unit as a routine procedure.

In cases where a circumvallate placenta is diagnosed in the antenatal period, fetal growth assessment is performed every month. Where there is a suspicion of IUGR or evidence of abnormal placental blood flow, ultrasound examination is performed weekly, twice a week or even daily, combined with CTG monitoring [15]. This protocol was introduced by the department of obstetrics at Charité university hospital, one of the largest perinatal centers in Berlin and Germany. The described pregnancy required more detailed observation than normal physiological pregnancies and follow-up visits were more therefore more frequent as recommended by the obstetrician.

Different authors have reported that a pregnancy with a pathological circumvallate placenta predisposes the woman to increased bleeding during labor, hemorrhage, and placental abruption, which is a life threatening condition [4, 15]. The aim of care in these cases is to detect disturbing symptoms early, prevent complications, and to make the right decision regarding delivery. There should be increased observation of the woman during labor, including the measurement of vital signs and observation of maternal behavior. Frequent obstetric assessment should be conducted, with special attention paid to any possibility of vaginal bleeding. If bleeding does occur, there should be an accurate assessment of the amount and character of bleeding as well as observation of any symptoms indicative of placental abruption. Symptoms of placental abruption include rapid bleeding and the presence of dark colored blood. Abruption begins with internal bleeding, with external bleeding becoming apparent later. During uterine contraction, bleeding is noted to decrease. Bleeding persists after rupture of the amnion. Other characteristic symptoms include a strong, stabbing pain in the lower abdomen, near to the separating placenta. So far, indications for continuous CTG monitoring during labor include abnormal CTG on admission to hospital, abnormal colored liquor following rupture of membranes, and high risk pregnancies as in the described case [17]. In the case of placental abruption, CTG may show: bradycardia, features of a narrowing, sinusoidal pattern and presence of decelerations. There may also be a characteristic "saw tooth" pattern of frequent and low amplitude uterine contractions. In the woman in labor with placental abruption, symptoms of shock are typically observed. Using wireless CTG detectors enable patient mobility and therefore the patient can benefit from the pain relieving properties of warm water in a shower, as in the aforementioned case. Different positions, such as an upright position, may be used according to the patient's needs. Breathing techniques, relaxation exercises and physiotherapy methods such as massage may also be used. Pharmacological relief of labor pain through inhalation analgesia and intravenous administration of paracetamol are commonly used [18]. In this case, the patient declined epidural analgesia.

The delivery room team should be ready to perform an emergency caesarean section with the patient being prepared as recommended. A circumvallate placenta is not a contraindication to vaginal delivery [3]. However, as a result of perinatal complications, delivery may be expedited by a life-saving caesarean section. In the described case, there were no complications directly caused by pathology of the placenta. The decision to proceed to delivery by caesarean section was not due to placental problems, but due to an obstructed labor and fetal malpresentation.

In the early postpartum period, history of a pathological placenta predisposes to the occurrence of puer-

peral complications, including the increased risk of hemorrhage as other authors point out [3, 4]. The aim of postnatal care therefore is the early detection of abnormalities in the course of the puerperium and the early detection of symptoms that may suggest the occurrence of obstetric hemorrhage. Frequent and regular assessment of the obstetric condition including presence of vaginal bleeding, localization and height of the uterine fundus and estimated uterus size. Monitoring vital signs should be carried out, such as body temperature, blood pressure, heart rate, skin color and mucous membranes, as well as regular assessment of the wellbeing of the patient. In the described case, the early postpartum period proceeded without complications.

In this case the patient was educated in the field of newborn care. There is no variation in care for a low birth weight infant compared with a newborn with higher birth weight. The patient in this case was well prepared for independent care of the child at home after being discharged from hospital.

A further aim of the midwife during the puerperium is also to ensure the proper course of lactation. The correct latching of the baby to the breast is a prerequisite for effective feeding. Correct emptying of the breast and appropriate hygiene of the breast during breastfeeding provide prophylaxis against postpartum mastitis. Supporting the woman during lactation and breastfeeding is particularly important due to the benefits to both mother and child from exclusive breastfeeding. Breastfeeding is the recommended way to feed the baby to facilitate proper development and improve the results of anthropometric measurements according to percentile grids. In this case, the baby latched onto the breast more often than other babies. The child, despite the low birth weight, didn't show any difficulties in latching on to the breast or sucking, and was gaining weight appropriately. The patient was under the care of a certified lactation consultant.

The course of therapeutic processes during delivery and the postpartum period is individually developed according to the clinical situation, the needs of the patient and the environment.

Antenatal education includes the practical and theoretical preparation of the pregnant woman and her family for pregnancy, childbirth, the puerperium and parenthood. This is typically delivered by antenatal classes which play a key role in relieving fear and anxiety related to childbirth and caring for the newborn, and affects the health and wellbeing of mothers and children. Antenatal classes also facilitate the building of good relationships resulting from motherhood and fatherhood [18].

The above mentioned case is clinically important because it is an example of the unfathomable circumvallate placental pathology, which is associated with a higher incidence of serious perinatal complications. This case also highlights the need to preserve the intrauterine wellbeing of the fetus in cases of circumvallate placenta, as even minor neglect may result in miscarriage or fetal death at a subsequent stage of pregnancy.

Conclusions

Pregnancies known to have a circumvallate placenta requires special attention due to the potential for reduced uteroplacental blood flow and placental insufficiency and the subsequent risk of IUGR and fetal death. Particular attention should be paid to performing regular and in depth ultrasound examinations and CTG recordings in these patients.

Observation plays a key role in midwifery care. In caring for a pregnant woman, the midwife is the healthcare professional in constant contact with the patient and is therefore the most likely person to notice a deterioration in the condition of the fetus, based on observed symptoms.

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